Performance of Double Cross Dent Corn Hybrids

In West Virginia, 1958-1960

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WEST VIRGINIA UNIVERSITY AGRICULTURAL EXPERIMENT STATION

SYNOPSIS

Hybrid corn trials have been conducted at several locations in West Virginia for many years. This report includes only the average performance of double cross hybrids for the three-year period, 1958-1960. Current Reports of the results for each year have been published and are available, upon request, through county offices of the Cooperative Extension Service or the West Virginia University Agricultural Experiment Station, Morgantown.

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Cover photograph by R. J. Friant, Extension Agronomist (Retired), Cooperative Extension Service, West Virginia University.

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by

M. W. Johnson, Associate Agronomist

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Summary

The results of the hybrid corn performance studies for the three-year period, 1958-1960, can be summarized as follows:

1. Of the earlier season hybrids tested in the Section 1 county trials, two experimental lines, 1601 and 1602, show the most promise from the standpoint of yield, maturity, and standability as compared to presently recommended hybrids. Even though 1624 outproduced them, it did not stand well and contained more moisture at harvest. The development of even earlier maturing lines than any of those tested may be necessary for certain areas of Section 1.

2. In the Section 1 State experiment station trials conducted at Reedsville several early- to medium-season experimental hybrids have been found to be superior from the standpoint of yield and standability. Of the earlier maturing lines, 1640, 1655, 1656, and 1657 proved to be outstanding, while of the medium-season lines 1603, 1653, 1680, and 1695 have given superior performance.

3. The medium-late maturing, experimental hybrid 1681 has proved to be an outstanding performer in both the Section 2 and 3a county trials, and it is being considered for possible release in the near future. A closely related line, 1697, has also given outstanding performance and appears to have a little more stalk strength than 1681.

4. Several medium-late to late maturing hybrids tested in the State experiment station trials in Sections 3 and 4 have given outstanding performances. In addition to the hybrids 1681 and 1697, the experimental lines 1540, 1573, 1665, and 1696 have been good performers. These will be given additional testing before being recommended for release to the public. The hybrid 1689, although a top producer, has certain less desirable agronomic characteristics, and thus will not be considered for release.

5. The recently released hybrid W. Va. 7802 continued to show superior performance as indicated by its record in the State experiment station trials. Three other recommended hybrids, A.E.S. 805, N.J. 8, and N.J. 9, also performed well in climatic Sections 3 and 4.

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M. W. JOHNSON, Associate Agronomist

Introduction

HYBRID corn performance trials have been conducted annually by the West Virginia University Agricultural Experiment Station in cooperation with the Cooperative Extension Service in several locations in this State. These trials were conducted at the University experiment station farms and in many of the counties of the State in cooperation with county agricultural agents and local farmers. The results for each year have been published as current reports.

During the three-year period, 1958-60, the hybrids tested were repeated at each location to determine their performance under varying environmental conditions. This report includes the average performance of the hybrids grown at the various locations for this period.

Seasonal Conditions

Climatic conditions were quite variable from year to year and from place to place. In general, 1958 was an exceptionally good corn year with plenty of moisture. In 1959, most of the State experienced a very dry summer and thus yields were low. The trials at both Morgantown and Point Pleasant failed. A more normal season was experienced in 1960. Yields were fair but not up to the level of those for 1958.

Field Procedures

The hybrids tested in the county trials were planted in the same field with other corn grown by the cooperating farmer and received the same cultural practices. Nine hybrids, replicated four times and arranged in a 3 x 3 balanced incomplete block lattice field design, were tested at each location. In these trials the individual hybrids were planted in 2 x 10 hill plots. Five kernels were planted per hill and thinned to three plants when the corn reached the height of 6 to 8 inches.

In addition to the county experiments, performance trials were conducted at four University experiment station farms located in different parts of the State. New hybrids developed by West Virginia plant breeders and selected out-of-state hybrids were subjected to both pre-

liminary and advanced testing in Station trials. Hybrids which showed superior performance in these trials were further tested in the county trials to determine more accurately their range of adaptation. A hybrid that proves to be outstanding after several years of testing in the State and county trials is normally released for production of certified seed and recommended to farmers for use in areas for which it is adapted.

The field design used for the Station trials was a 5 x 5 balanced lattice square. In these trials the individual hybrids were drilled in 2-row plots,* 30 feet in length, with 36-inch row spacing. Fifty kernels were planted per row with a specially adapted cone seeder mounted on a conventional 2-row planter. The plots were thinned to 30 plants per row when the corn reached the height of 6 to 8 inches. The areas used for the test plots were tested for pH and soil fertility and were limed and fertilized accordingly. Approximately three-fourths of the fertilizer was plowed down and one-fourth applied in the row when the corn was planted.

Data Measurements

Data recorded at the time of harvest for individual plots were plant stand counts, broken plant counts, and husked ear weights. Moisture samples were obtained from each hybrid by removing two rows of kernels from a sufficient number of ears to fill two pint jars. These were sealed and taken to the plant laboratory at Morgantown where moisture determinations were made.

Reported yields are expressed in bushels of shelled corn per acre on the basis of 15.5 per cent moisture. In computing the yield from the field weight, corrections were made for moisture content, percentage of stand, row-hill spacing and, in most cases, adjustment for interblock variation as determined by the analysis of variance.

Average moisture content, expressed as a percentage of the field weight at harvest, is given in the tables for each location. The amount of moisture in kernels at harvest is usually a good indication of the maturity of a hybrid; the higher the moisture content the later the hybrid, or the lower the moisture the earlier the hybrid. Maturity is of primary importance in selecting hybrids that will produce mature, sound grain at the variable lengths of growing season characteristic of different areas and elevations found in West Virginia. Moisture content and harvest date are considered when the hybrids are screened for adaptability.

Average broken plant percentages are given for the hybrids in the trial and indicate the ability of a hybrid to remain standing until harvest. It may be noted that for a particular hybrid this factor differs

*In 1960, one-row plots were used.

from one location to another. Several factors, such as fertility levels, diseases, insects, wind, precipitation, and date of harvest, may cause such variation. However, hybrids resistant to stalk rot diseases usually are not subject to breakage.

The least significant difference (L.S.D.) for each location is given at the bottom of the respective tables. When interpreting the yield data of these tests, small differences that exist between any two hybrids grown at a particular location should not be over-emphasized. It is here that the L.S.D.'s are useful since they can be used to indicate whether or not the yields of two hybrids are significantly different. If the higher producing hybrid exhibits a yield per acre advantage over the lower one, equal to or greater than the L.S.D. for that particular trial, its yield performance can be considered superior.

INDEX TO HYBRIDS TESTED

Hybrid	Table(s)	Pedigree
West Virginia Experimental Hybrids		
1512	18,20,22,29	(W22xWF9)x(Oh51AxOh28)
1534	18,20,22,29,30	(WF9xHy)x(38-11xC102)
1540	18,20,22,29,30	(C103x8(7)x(J47xWV5)
1572	6	(M14xWV5)x(A552xWV12)
1573	5,11,14,15,17,19,21,23,27,28,30	(C102xC103)x(38-11IBxWF9)
1585	18,20,22,29,30	(WV5xW24)x(38-11IBxB10)
1588	18,20,22,29,30	(WV5xM14)x(38-11IBxB10)
1590	11,14,15,18,20,22,23,27,29,30	(HyxWV101)x(38-11IBxB10)
1591	18,20,22,29,30	(WV5xW22)x(38-11IBxB10)
1592	18,20,22,29	(WV5xI11A)x(38-11IBxB10)
1595	6	(W22xB9)x(WV5xI11A)
1596	5	(B9xWV12)x(WV5xI11A)
1601	1,2,3,4,5,17,19,24,28	(W22xB9)x(WV106xWV105)
1602	1,2,3,4,5,24	(B9xWV12)x(WV106xWV105)
1603	6	(W22xW24)x(WV106xWV105)
1604	6	(WF9xB9)x(WV5xW24)
1606	5,17,19,28	(W22xB9)x(WV5xW24)
1607	1,2,3,4,5,17,19,24,28	(B9xWV12)x(WV5xW24)
1609	1,2,3,4,5,7,8,9,10,17,19,24,25,28	(Oh28xB8)x(WV5xW24)
1615	5	(W22xW24)x(WV12xM14)
1616	5,17,19,28	(WV5xW22)x(WV12xM14)
1618	6	(WV5xB8)x(WV12xM14)
1619	6	(Oh28xB8)x(WV12xM14)
1621	1,2,3,4,5,17,19,24,28	(W22xB9)x(WV5xWV12)
1622	5,17,19,28,30	(W22xW24)x(WV5xWV12)
1623	6	(W22xB9)x(WV12xW24)
1624	1,2,3,4,5,17,19,24,28,30	(WV5xM14)x(WV12xW24)
1625	6,17,19,21,28	(HyxWV101)x(WV12xW24)

INDEX TO HYBRIDS TESTED—(Continued)

Hybrid	Table(s)	Pedigree
1627	6	(WV5xM14)x(WF9xB9)
1630	6	(WV5xA552)x(M14xB9)
1633	6	(WV5xW22)x(M14xB9)
1640	6	(WV5xM14)x(W22xB9)
1641	6	(WV5xA552)x(W22xB9)
1642	6	(W22xB9)x(HyxWV101)
1643	6	(WV5xB8)x(W22xB9)
1648	6	(W22xW24)x(B9xWV12)
1650	6	(WV5xM14)x(B9xWV12)
1651	6	(Oh28xB8)x(WV5xM14)
1653	6	(W22xW24)x(WV5xA552)
1655	6	(W22xWV5)x(Oh28xB8)
1656	6	(WV5xB8)x(Oh51AxW22)
1657	6	(Oh28xB8)x(Oh51AxW22)
1662	18,20,22,29,30	(C102xC103)x(W22xI11A)
1663	6	(WV5xA552)x(WV12xW24)
1664	5,7,8,9,10,12,13,17,19,25,26,28,30	(WV5xWV12)x(Oh43xOh45)
1665	11,14,15,18,20,22,23,27,29,30	(C102xC103)x(Oh43xOh45)
1667	5,7,8,9,10,12,13,16,17,19,25,26,28	(Oh45xWF9)x(WV5xOh43)
1668	18,20,22,29,30	(C102xOh45)x(WV5xOh43)
1670	18,20,22,29,30	(Oh43xHy)x(WV5xOh45)
1671	18,20,22,29	(Oh43xWF9)x(WV5xOh45)
1672	12,13,16,18,20,22,26,29	(Oh43xC103)x(WV5xOh45)
1675	5	(I11AxB9)x(Oh45xWV12)
1677	18,20,22,29,30	(W22xM14)x(WV7xJ47)
1678	18,20,22,29,30	(38-11IBxWF9)x(WV5xWV12)
1679	18,20,22,29	(WV101xW8)x(Oh45xWV12)
1680	5,7,8,9,10,17,19,21,25,28,30	(R2xW22)x(Oh45xWV12)
1681	7,8,9,10,11,12,13,14,15,16,17, 19,21,23,25,26,27,28,30	(C103x8(7)x(Oh45xWV12)
1682	5,17,19,21,28	(A385xWV5)x(Oh45xWV12)
1689	18,20,22,29,30	(38-11IBxWV7)x(LA(KR)xJ47)
1695	5,17,19,21,28,30	(R2xW22)x(WV5xOh43)
1696	11,14,15,18,22,23,27,29,30	(C103x8(7)x(WV5xOh43)
1697	5,12,13,16,17,19,21,26,28,30	(Oh45xWF9)x(C103x8(7)
1702	5,17,19,28	(B9xWV12)x(Hyx1205)
W. Va. 7802	5,17,19,21,28,30	(C102xC103)x(WF9xB10)
W.Va. B-25	1,2,3,4,5,7,8,9,10,11,12,13,14,15, 16,17,19,21,24,25,26,27,28,30	(Oh51AxWF9)x(WV5xWV12)
AES 805	11,12,13,14,15,16,18,20,22, 23,27,29,30	(WF9x38-11)x(Oh45xC103)
Ia. 4376	18,20,22,29,30	(WF9xB6)x(187-2xM14)
Ky. 105	21	(T8xCI21E)x(38-11xOh7B)
Ky. 106A	21	(WF9x51A)x(M14xOh43)
Ky. 204	21	(K64x3-16)x(K55xKy201)

INDEX TO HYBRIDS TESTED—(Continued)

Hybrid	Table(s)	Pedigree
Ky. 5712W	21	(CI64x3516)x(K55xKy201)
N.J. 8	7,8,9,10,11,12,13,14,15,16,17, 19,21,23,25,26,27,28,30	(WF9xHy2)x(C102xC103)
N.J. 9	17,19,21,28,30	(WF9xHy2)x(J47xC103)
N.J. 10	18,20,22,29,30	(Hy2xOh45)x(J47x38-11)
Oh. C-38	21	(WF9xHy)x(Oh40BxL317)
Oh. C-47	21	(WF9xHy)x(Oh40BxL317)
Oh. C-54	21	(Oh26xHy)x(Oh43xOh45)
Oh. K-62	5,7,8,9,10,17,19,25,28	(Oh51AxOh26)x(Oh43xOh45)
Oh. L-41	21	(WF9xHy)x(Oh41xOh40B)
Oh. L-51	21,23	(WF9xHy)x(Oh43xOh45)
Oh. M-15	1,2,3,4,6,24	(Oh26xOh51)x(I11AxWis23)
Oh. M-53	1,2,3,4,5,24	(Oh5xA73)x(Oh51AxOh26A)
Oh. W-45	6,7,8,9,10,17,19,25,28	(WF9xOh43)x(M14xCI187-2)
Oh. W-64	18,20,22,29,30	(Oh51AxWF9)x(Oh43xOh45)
U.S. 13	11,12,13,14,15,16,18,20,22, 23,26,27,29,30	(WF9x38-11)x(HyxL317)

TEST RESULTS—MEAN PERFORMANCE FOR 1958-1960

SECTION 1. SHORT SEASON: The Northern two-thirds of the State at altitudes of 1,700 to 2,700 feet above sea level. This area includes Pocahontas and Tucker counties, parts of Barbour, Nicholas, Pendleton, Preston, Randolph, Upshur, and Webster counties and possible areas in some adjacent counties.

Table 1. Fayette County* (Alt. 1,965 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1624	98.5	27.1	8.8
1607	93.1	23.5	12.8
1601	91.6	24.5	7.0
1602	91.3	21.5	5.6
1621	88.5	23.0	9.8
W. Va. B-25	88.4	23.4	5.0
1609	85.7	23.4	16.4
Oh. M-15	76.9	23.0	7.0
Oh. M-53	73.8	24.0	5.4

L.S.D. = 7.3 bu.

* 2-yr. avg. 1959-60

Table 2. Pocahontas County (Alt. 2,460 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1624	98.3	25.6	27.9
1602	97.7	22.6	24.1
W. Va. B-25	96.5	23.5	28.7
1621	94.0	22.7	24.1
1607	93.9	25.5	29.9
1609	92.5	23.9	30.7
1601	91.3	23.7	18.4
Oh. M-53	78.8	21.8	19.2
Oh. M-15	77.0	23.4	19.8

L.S.D. = 5.3 bu.

Table 3. Preston County (Alt. 2,750 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1624	125.9	38.4	13.9
1601	125.0	40.8	1.5
1602	122.9	35.8	4.0
W. Va. B-25	122.8	35.5	1.9
1621	122.3	36.2	7.2
1607	120.3	36.6	6.2
1609	119.1	36.9	6.0
Oh. M-53	101.5	33.9	4.2
Oh. M-15	98.6	34.6	5.3

L.S.D. = 6.5 bu.

Table 4. Webster County (Alt. 2,200 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1624	99.8	26.2	11.8
1601	95.1	23.6	2.6
1609	92.6	23.0	5.9
1607	91.0	23.5	7.2
W. Va. B-25	90.1	26.2	4.3
1621	88.6	23.5	5.2
1602	86.5	23.5	3.5
Oh. M-15	75.4	26.0	1.1
Oh. M-53	72.6	24.1	2.8

L.S.D. = 9.2 bu.

Table 5. Reedsville Experiment Farm—Trial I (Alt. 1,800 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1664	140.0	32.7	17.0
1573	132.9	30.5	17.3
1680	126.4	30.1	9.7
1624	123.9	30.9	28.7
1622	121.6	30.8	22.1
1609	119.0	27.8	28.3
W. Va. 7802	118.9	30.8	17.3
1697	118.1	34.2	9.9
1682	117.7	28.7	22.1
1695	116.0	32.0	6.2
1667	115.6	32.8	9.9
1596	115.4	31.0	26.4
1602	115.3	28.2	23.9
W. Va. B-25	115.2	29.7	10.4
1616	114.7	32.9	18.2
1606	113.0	29.0	23.7
1621	112.4	26.3	21.7
1607	112.2	29.7	29.3
1601	110.8	29.0	15.8
1615	110.5	30.4	26.1
1675	107.4	30.8	29.0
Oh. K-62	106.6	29.4	16.1
1702	105.5	30.1	9.9
Oh. M-53	104.2	26.5	20.9

L.S.D. = 11.4 bu.

Table 6. Reedsville Experiment Farm—Trial II (Alt. 1,800 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1640	127.3	27.1	15.5
1625	126.4	30.7	24.5
1655	125.1	27.8	17.7
1572	123.1	30.1	21.0
1603	122.8	30.2	11.7
1648	121.9	27.1	25.3
1653	120.7	32.0	9.8
1656	120.1	26.4	16.5
1657	119.5	27.0	12.4
1643	119.3	25.2	26.5
1604	118.9	27.9	22.4
1650	118.9	27.2	33.0
1633	118.4	28.2	23.2
1642	118.1	30.7	14.5
1641	117.1	28.0	17.0
1619	116.4	26.5	21.5
1663	115.7	31.0	22.0
1627	115.6	29.6	28.3
1651	115.2	27.0	17.1
1623	114.8	27.2	22.3
1630	114.8	29.4	19.1
1618	112.5	27.5	16.8
Oh. W-45	108.8	29.9	13.4
1595	107.2	29.5	22.2
Oh. M-15	102.4	28.9	33.4

L.S.D. = 10.8 bu.

SECTION 2. MEDIUM-SHORT SEASON: The Northern one-third of the State at altitudes from 1,000 to 1,700 feet above sea level, but in the Northern Panhandle counties above 750 feet, and in the Southern two-thirds of the State from 1,700 to 2,700 feet; except for Berkeley and Jefferson in Section 3, and Cabell, Jackson, Kanawha, Lincoln, Logan, Mason, Putnam, and Wayne counties in Sections 3 and 4, some parts of all the counties belong in Section 2.

Table 7. Barbour County (Alt. 1,700 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1681	112.0	27.8	0.9
N.J. 8	106.1	27.8	1.3
1664	105.1	25.9	2.1
1667	98.7	30.0	2.1
1680	96.9	26.2	1.7
W. Va. B-25	91.4	24.4	1.5
1609	84.3	25.8	5.2
Oh. W-45	83.2	26.9	0.6
Oh. K-62	81.2	25.5	0.4

L.S.D. = 9.1 bu.

Table 8. Greenbrier County* (Alt. 2,250 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1681	80.2	29.4	4.9
1664	71.7	30.9	4.4
1609	67.7	24.0	5.7
Oh. K-62	63.3	27.5	1.7
Oh. W-45	62.4	26.3	2.3
1667	61.3	30.6	3.6
N.J. 8	61.2	27.7	7.7
1680	60.2	26.9	3.5
W. Va. B-25	58.8	23.6	5.0

L.S.D. = 7.5 bu.

* 2-yr. avg. 1959-60

Table 9. Randolph County* (Alt. 2,100 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1681	119.1	26.0	2.2
1664	106.2	24.4	9.0
N.J. 8	106.2	24.7	4.4
1609	105.6	19.4	14.6
W. Va. B-25	102.9	20.2	4.0
1667	100.4	25.1	7.4
1680	99.5	22.2	5.5
Oh. W-45	93.3	24.3	0.7
Oh. K-62	92.8	21.1	2.3

L.S.D. = 9.0 bu.

* 2-yr. avg. 1959-60

Table 10. Upshur County (Alt. 1,850 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1681	111.5	30.9	2.8
1664	104.0	28.3	4.6
N.J. 8	99.8	30.0	2.2
1680	94.8	26.7	3.6
1667	94.3	31.5	1.8
W. Va. B-25	84.1	26.0	6.1
1609	82.5	26.3	7.6
Oh. W-45	82.3	26.5	3.2
Oh. K-62	76.7	26.1	2.1

L.S.D. = 8.3 bu.

SECTION 3. MEDIUM-LONG SEASON: At altitudes below 1,000 feet in the Northern and Eastern Panhandle counties; and between 750 and 1,700 feet in the Southern one-third of the State. Thus, all of Berkeley and Jefferson counties are in Section 3, and all of the other counties, except those listed in the first two groups in our recommendation have areas in Section 3.

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants

Table 11. Berkeley County (Alt. 450 feet)

1696	99.1	29.9	10.6
1573	96.2	27.2	9.9
N.J. 8	90.4	28.0	8.5
1665	88.2	29.9	9.5
A.E.S. 805	87.7	29.0	13.5
1681	85.0	29.1	15.0
U.S. 13	80.5	28.4	22.7
W. Va. B-25	79.3	25.9	24.3
1590	78.8	31.0	18.0

L.S.D. = 6.2 bu.

Table 12. Braxton County* (Alt. 1,000 feet)

1681	127.5	29.5	3.3
1697	121.0	29.6	3.7
1664	114.5	32.7	5.2
N.J. 8	113.2	29.2	3.1
A.E.S 805	11.2	30.7	3.3
1672	108.9	32.0	4.6
1667	108.8	30.9	1.9
U.S. 13	99.0	31.5	8.8
W. Va. B-25	99.0	26.2	4.8

L.S.D. = 6.8 bu.

* 2-yr. avg. 1959-60

Table 13. Doddridge County (Alt. 900 feet)

1664	114.2	33.2	5.0
1681	112.4	34.5	1.1
1697	110.7	32.9	0.7
N.J. 8	109.5	33.0	1.4
A.E.S. 805	107.4	32.2	2.4
1667	106.2	31.2	1.9
U.S. 13	106.2	30.9	4.7
1672	100.7	32.8	1.4
W. Va. B-25	99.9	29.1	4.3

L.S.D. = 7.5 bu.

Table 14. Grant County (Alt. 950 feet)

1573	112.6	22.3	7.2
1696	107.9	23.6	6.7
1665	106.9	21.9	4.2
N.J. 8	106.5	21.5	7.5
1681	102.7	23.5	5.0
A.E.S. 805	100.8	23.5	7.4
U.S. 13	93.7	22.9	9.6
1590	93.2	23.8	15.0
W. Va. B-25	85.3	19.2	14.0

L.S.D. = 6.4 bu.

Table 15. Hampshire County* (Alt. 800 feet)

1696	85.5	30.8	16.5
N.J. 8	83.0	30.0	14.0
1681	82.2	30.1	15.3
1573	81.6	31.7	11.2
1665	79.9	28.7	14.8
W. Va. B-25	77.6	25.5	14.9
1590	76.1	32.9	8.4
U.S. 13	76.0	31.0	10.6
A.E.S. 805	73.9	31.8	10.8

L.S.D. = 5.8 bu.

In 1959 the crop was very poor because of weeds and low moisture.

Table 16. Wirt County (Alt. 700 feet)

1697	129.6	28.3	2.3
1681	123.7	28.6	4.0
N.J. 8	122.7	27.8	2.8
A.E.S. 805	118.9	28.4	4.4
U.S. 13	118.9	27.7	9.1
1664	114.3	29.2	10.6
1667	110.2	29.3	5.9
1672	108.1	29.8	5.1
W. Va. B-25	105.0	22.9	13.6

L.S.D. = 7.1 bu.

Table 17. Morgantown Agronomy Farm—Trial I* (Alt. 1,000 feet)

W. Va. 7802	129.7	24.8	2.7
N.J. 9	127.3	27.4	4.7

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1697	123.1	26.9	4.5
1573	121.3	24.6	3.5
N.J. 8	121.0	25.0	1.4
1681	114.0	26.9	6.5
1664	113.0	25.1	6.4
1695	112.0	23.7	5.5
1622	110.1	23.2	13.2
1667	108.9	26.2	3.3
1680	108.2	22.5	9.6
W. Va. B-25	107.8	22.1	5.4
1616	106.2	23.8	10.6
1702	105.6	22.3	5.1
1601	105.6	22.3	10.0
1625	104.1	23.8	15.8
1609	104.0	22.3	9.7
1624	104.0	22.8	24.1
1621	102.5	18.8	11.8
1606	98.5	21.2	11.8
1682	94.8	22.6	15.6
1607	94.4	22.9	9.4
Oh. W-45	91.9	23.5	6.5
Oh. K-62	88.1	23.8	9.5

L.S.D. = 9.5 bu.

* 2-yr. avg. 1958 and 1960

Table 18. Morgantown Agronomy Farm—Trial II* (Alt. 1,000 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1591	135.2	27.1	5.3
1540	134.6	25.2	4.3
1696	133.9	26.9	4.9
1689	129.9	26.5	4.8
1588	129.0	26.1	3.0
1677	128.0	24.8	5.0
1585	127.8	25.4	5.5
1665	126.2	25.1	2.5
1590	124.6	26.2	4.6
A.E.S. 805	123.0	25.0	6.4
N.J. 10	122.9	27.2	1.1
1592	122.8	24.4	2.3
1678	121.1	24.7	6.5
1671	120.4	25.1	3.0
1534	119.8	24.3	4.7
1668	118.2	25.1	7.6
U.S. 13	117.4	26.6	11.8
1670	117.0	26.9	2.5
1672	115.4	26.6	4.2
1662	113.8	24.7	7.0
Ia. 4376	112.4	22.6	8.6
1679	111.6	25.2	14.2
1512	107.3	21.9	3.3
Oh. W-64	105.9	24.5	3.7

L.S.D. = 10.3 bu.

* 2-yr. avg. 1958 and 1960

Table 19. Wardensville-Reymann Memorial Farms—Trial I (Alt. 950 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1681	112.4	26.1	9.9
N.J. 8	111.3	26.9	8.7
W. Va. 7802	108.4	23.5	7.9
N.J. 9	107.2	28.9	5.0
1664	106.2	25.0	12.2
1616	104.8	26.0	14.9
1573	104.0	25.8	5.0
1680	103.1	24.2	6.9
1695	102.3	24.5	10.2
1622	102.1	23.2	16.1
1624	101.9	23.4	31.5
1697	100.0	27.4	7.0
Oh. W-45	98.6	24.9	7.6
1625	98.6	25.2	21.0
W. Va. B-25	97.5	22.4	7.6
1667	96.2	25.7	7.3
1606	95.2	21.7	15.1
1607	94.5	23.2	14.3
1621	92.7	21.1	16.3
1682	91.8	22.5	21.1
1702	91.3	23.7	7.1
1601	91.3	22.1	12.0
1609	89.4	22.4	16.3
Oh. K-62	85.1	22.5	6.0

L.S.D. = 8.4 bu.

Table 20. Wardensville-Reymann Memorial Farms—Trial II (Alt. 950 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1689	111.8	25.5	11.2
1585	107.9	27.1	12.0
1665	106.6	25.6	6.2
1588	104.2	25.5	13.5
A.E.S. 805	103.7	27.9	5.4
1677	103.6	25.8	14.1
1590	103.1	27.4	11.9
1670	102.8	27.3	8.5
U.S. 13	102.7	27.4	7.6
1678	102.4	24.4	15.4
N.J. 10	102.3	30.0	4.2
1534	101.8	25.7	5.8
Oh. W-64	101.2	23.7	3.7
1668	100.6	24.4	11.5
1662	99.5	23.3	13.5
1696	99.1	27.7	7.3
1672	96.3	27.0	10.4
1512	96.0	22.0	6.8
1540	93.6	26.3	15.7
1591	93.5	26.1	9.9
Ia. 4376	93.4	25.0	7.2
1592	91.9	26.2	11.5
1671	89.3	25.6	5.2
1679	88.1	24.8	21.2

L.S.D. = 7.5 bu.

SECTION 4. LONG-SEASON: Areas where the altitudes are below 750 feet in the Southern one-third of the State, including the Ohio River bottom land from Mason County southward and parts of Cabell, Jackson, Kanawha, Lincoln, Logan, Putnam, and Wayne counties. Higher altitudes in these counties belong in Section 3.

Table 21. Point Pleasant-Ohio Valley Experiment Station—Trial I* (Alt. 600 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
W. Va. 7802	129.8	25.6	3.1
1697	129.7	25.8	1.4
1573	126.6	25.4	3.8
1681	123.5	25.3	5.5
Ky. 105	123.1	32.4	0.9
N.J. 9	123.0	28.2	4.7
Ky. 5712W	118.1	29.4	1.7
N.J. 8	115.8	26.0	2.2
Oh. C-54	108.6	24.2	2.7
Oh. L-51	108.4	26.3	1.1
Ky. 204	108.0	30.5	3.3
1695	105.1	22.9	6.3
Ky. 106A	100.3	25.6	10.9
Oh. C-47	98.2	26.1	3.9
Oh. C-38	97.8	24.3	2.6
1680	97.4	23.7	7.8
W. Va. B-25	96.5	23.2	7.8
Oh. L-41	96.1	27.3	4.4
1625	94.1	26.9	17.5
1682	85.6	21.9	13.7

L.S.D. = 11.8 bu.

* 2-yr. avg. 1958 and 1960

Table 22. Point Pleasant-Ohio Valley Experiment Station—Trial II* (Alt. 600 feet)

1696	128.6	26.2	2.9
1689	126.4	27.4	5.5
1540	125.7	25.6	5.8
N.J. 10	121.3	27.0	5.4
1665	118.1	25.4	6.3
1591	117.5	26.5	9.9
A.E.S. 805	111.6	26.1	5.0
1668	111.5	24.9	15.3
1662	111.1	23.6	8.4
1585	110.1	26.9	19.6
1678	109.6	25.2	7.6

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1671	109.5	26.2	5.1
1592	109.1	24.0	21.2
1670	108.8	27.6	4.4
1672	107.7	24.7	8.6
1534	107.3	24.4	12.5
1590	106.2	27.0	10.3
1588	104.8	25.7	15.6
U.S. 13	103.8	27.1	15.0
1677	103.0	26.0	23.8
1679	102.8	25.9	7.8
Oh. W-64	98.8	24.9	2.7
Ia. 4376	95.7	23.2	7.5
1512	89.4	22.1	2.5

L.S.D. = 11.8 bu.

* 2-yr. avg. 1958 and 1960

Table 23. Wayne County (Alt. 700 feet)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1665	75.7	24.6	0.9
1681	75.6	24.9	1.3
A.E.S. 805	75.4	25.3	1.0
U.S. 13	75.3	23.5	1.6
1696	74.8	27.6	1.1
Oh. L-51	74.3	25.9	0.6
N.J. 8	72.5	24.9	1.0
1573	70.4	24.3	0.7
1590	67.7	26.3	2.6

L.S.D. = 8.4 bu.

PERFORMANCE SUMMARY OF ENTRIES FOR EACH OF THE REGIONAL AND CLIMATIC SECTIONS OF WEST VIRGINIA, 1958-1960

Table 24. Section 1—Fayette, Pocahontas, Preston, and Webster Counties

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1624	105.6	29.3	15.6
1601	100.7	28.1	7.4
1602	99.6	25.8	9.3
1607	99.6	27.3	14.0
W. Va. B-25	99.4	27.1	10.0
1621	98.3	26.3	11.6
1609	97.5	26.8	14.7
Oh. M-15	82.0	26.7	8.3
Oh. M-53	81.7	25.9	7.9

L.S.D. = 7.1 bu.

Table 25. Section 2—Barbour, Randolph, and Upshur Counties

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1681	105.7	28.5	2.7
1664	96.7	27.4	5.0
N.J. 8	93.3	27.5	3.9
1667	88.7	29.3	3.7
1680	87.8	25.5	3.6
1609	85.0	23.9	8.3
W. Va. B-25	84.3	23.5	4.1
Oh. W-45	80.3	26.0	1.7
Oh. K-62	78.5	25.0	1.6

L.S.D. = 8.5 bu.

Table 26. Section 3a—Braxton, Doddridge, and Wirt Counties

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1681	121.2	30.9	2.8
1697	120.4	30.3	2.2
N.J. 8	115.1	30.0	2.4
1664	114.3	31.7	6.9
A.E.S. 805	112.5	30.4	3.4
1667	108.4	30.5	3.2
U.S. 13	108.0	30.0	7.5
1672	105.9	31.5	3.7

PERFORMANCE SUMMARY OF ENTRIES FOR EACH OF THE REGIONAL AND CLIMATIC SECTIONS OF WEST VIRGINIA, 1958-1960—(Continued)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
W. Va. B-25	101.3	26.1	7.6

L.S.D. = 7.1 bu.

Table 27. Section 3b—Berkeley, Grant, and Hampshire Counties

1696	97.5	28.1	11.3
1573	96.8	27.1	9.4
N.J. 8	93.3	26.5	10.0
1665	91.7	26.8	9.5
1681	90.0	27.6	11.8
A.E.S. 805	87.5	28.1	10.6
U.S. 13	83.4	27.4	14.3
1590	82.7	29.2	13.8
W. Va. B-25	80.7	23.5	17.7

L.S.D. = 6.1 bu.

Table 28. Trial I—Morgantown and Wardensville

W. Va. 7802	119.0	24.1	5.3
N.J. 9	117.2	28.1	4.8
N.J. 8	116.1	26.0	5.0
1681	113.2	26.5	8.2
1573	112.6	25.2	4.2
1697	111.5	27.1	5.7
1664	109.6	25.0	9.3
1695	107.1	24.1	8.0
1622	106.1	23.2	14.6
1680	105.6	23.3	8.2
1616	105.5	24.9	12.7
1624	103.0	23.1	27.8
W. Va. B-25	102.6	22.2	6.5
1667	102.5	25.9	5.3
1625	101.3	24.5	18.4
1702	98.4	23.0	6.1
1601	98.4	22.2	11.0
1621	97.6	19.9	14.0
1606	96.8	21.4	13.4
1609	96.7	22.3	13.0
Oh. W-45	95.2	24.2	7.0
1607	94.4	23.0	11.8
1682	93.3	22.5	18.3
Oh. K-62	86.6	23.1	7.7

L.S.D. = 9.0 bu.

Table 29. Trial II—Morgantown, Wardensville, and Point Pleasant

1689	122.7	26.5	7.2
1696	120.5	26.9	5.0
1540	118.0	25.7	8.6
1665	117.0	25.4	5.0
N.J. 10	115.5	28.1	3.6
1591	115.4	26.6	8.4
1585	115.3	26.5	12.4
A.E.S. 805	112.8	26.3	5.6
1588	112.7	25.8	10.7
1677	111.5	25.5	14.3
1590	111.3	26.9	8.9
1678	111.0	24.8	9.8
1668	110.1	24.8	11.5
1534	109.6	24.8	7.7
1670	109.5	27.3	5.1
1662	108.1	23.9	9.6
U.S. 13	108.0	27.0	11.5
1592	107.9	24.9	11.7
1672	106.5	26.1	7.7
1671	106.4	25.6	4.4
Oh. W-64	102.0	24.4	3.4
1679	100.8	25.3	14.4
Ia. 4376	100.5	23.6	7.8
1512	97.6	22.0	4.2

L.S.D. = 10.0 bu.

Table 30. Over-all mean performance of corn hybrids in the experiment station trials using U.S. 13 as a standard for medium-late to late and Ia. 4376 as a standard for medium season hybrids (1958-60)

Medium Late to Late Maturity			
1689	122.7	26.5	7.2
W. Va. 7802	122.6	24.6	4.6

PERFORMANCE SUMMARY OF ENTRIES FOR EACH OF THE REGIONAL AND CLIMATIC SECTIONS OF WEST VIRGINIA, 1958-1960—(Continued)

Hybrid	Yield Bu./A.	% Moisture	% Broken Plants
1696	120.5	26.9	5.0
N.J. 9	119.2	28.2	4.8
1540	118.0	25.7	8.6
1697	117.6	26.7	4.3
1573	117.3	25.3	4.1
1665	117.0	25.4	5.0
1681	116.6	26.1	7.3
N.J. 8	116.0	26.0	4.1
N.J. 10	115.5	28.1	3.6
1591	115.4	26.6	8.4
1585	115.3	26.5	12.4
A.E.S. 805	112.8	26.3	5.6
1588	112.7	25.8	10.7
1677	111.5	25.5	14.3
1590	111.3	26.9	8.9
1678	111.0	24.8	9.8
1668	110.1	24.8	11.5
1534	109.6	24.8	7.7
1664	109.6	25.0	9.3
1670	109.5	27.3	5.1
U.S. 13	108.0	27.0	11.5
		Medium Maturity	
1662	108.1	23.9	9.6
1695	106.5	23.7	7.2
1622	106.1	23.3	14.6
1624	103.1	23.1	27.8
1680	102.9	23.5	8.1
Oh. W-64	102.0	24.4	3.4
W. Va. B-25	100.6	22.6	6.9
Ia. 4376	100.5	23.6	7.8

Discussion and Summary of Results

The hybrid corn performance results for the short-season areas of the State, as represented by Fayette, Pocahontas, Preston, and Webster counties, and the Reedsville Experiment Farm (Tables 1-6), indicate considerable variation in average yield, moisture, and stalk breakage data from place to place for a particular hybrid. Hybrid 1624, however, was consistently high in yield, moisture content, and stalk breakage, whereas Oh M-15 and M-53 were consistently low for these factors at all locations. W.Va. B-25 attained about a medium for these factors, but the other hybrids fluctuated from one location to another. Several hybrids, tested only at the Reedsville farm, showed promise to be good early to medium-early lines. These will be tested further at other locations. In the general summary of entries of the county trials for Section 1 (Table 24), the hybrid 1602 appears to be the most desirable one from the standpoint of yield, maturity, and standability. Hybrids 1621 and 1601 would be second choices, with 1601 producing slightly higher yield and better standability, but being later in maturity than 1621.

In the medium-short season areas, as represented by Barbour, Greenbrier, Randolph, and Upshur counties (Tables 7-10), two experimental

hybrids, 1681 and 1664, were consistently high producers, while two standard hybrids, Oh W-45 and Oh K-62, were consistently low in yield. The hybrid 1681 had the edge in production and standability, but 1664 was more mature at harvest. The hybrid N.J. 8 generally looked quite promising, yielding on a par with 1664 in all counties but one. With the exception of 1667, the remaining hybrids were shorter-season types than the top three (Table 25) and had lower yield potentials.

The county and State trials included in Section 3 (Tables 11-20) represented a wider range of climatic conditions than those included in the other sections and thus have been summarized as 3a (Table 26) and 3b (Table 27). In the county trials of Section 3a (Tables 12, 13, 16, and 26) the hybrid 1681 again appeared to be outstanding, with 1697 running a very close second. N.J. 8 and 1664 performed quite well, but were not as consistent in production as the two high ones. All of these hybrids are similar in maturity to U.S. 13 as can be seen in summary Table 26. W.Va. B-25, which is an earlier line, was included to show farmers the role of maturity in total production.

Section 3b, which includes Berkeley (Table 11), Grant (Table 14), and Hampshire (Table 15) counties, has approximately the same length growing season as 3a, but the average temperatures during this period are higher and the average available moisture is generally much lower. Also, soil fertility tended to be lower. Thus, yields are usually considerably lower and the general reaction of the hybrids may be quite different. The same situation applies to the two State experiment stations included in Section 3. Morgantown falls into the 3a group, while the Reymann Memorial Farms would be classed with the 3b group. Yields were considerably lower for the 3b areas and stalk breakage was greater. The hybrid 1696 was generally the highest producer, but 1573 ran a very close second. N.J. 8 and 1665 were not significantly lower in yield than either of the two higher yielding ones and were slightly earlier maturing. Again, as in Section 3a, W.Va. B-25 was included to show the role of maturity in total production. For some reason, the hybrid 1681 did not demonstrate superior production as it did in Sections 2 and 3a. It appeared to be more adversely affected by low moisture. However, at both the Reymann Memorial Farms (Section 3b) and at the Ohio Valley Experiment Station (Section 4), where hot, dry summers are common, it performed very well, thus indicating a marked sensitivity to low soil fertility levels in the Section 3b county trials.

The two State experiment stations located in Section 3, Morgantown (Tables 17 and 18), and Wardensville (Tables 19 and 20), were not summarized with the county trials. Trial I for both locations (Tables 17 and 19) is summarized in Table 28. Three released hybrids, W.Va. 7802, N.J. 9, and N.J. 8, proved to be superior at both locations. Of

these, W.Va. 7802 is the earliest maturing one, N.J. 9 the latest, and N.J. 8 between them. In addition, the experimentals 1681, 1573, 1697, and 1664 appeared to show much promise. The two Ohio lines, Oh K-62 and Oh W-45, which are similar to W.Va. B-25 in maturity, did not perform up to expectation. As anticipated, most of the earlier maturing lines included in these trials did not exhibit the yield potential of later lines.

In general, the hybrids included in trial II at Morgantown (Table 18) and Wardensville (Table 20) were of medium late to late maturity and thus were also included in trial II at Point Pleasant (Section 4, Table 22). These three trials are summarized in Table 29. As might be expected, there was more variation in hybrids for locations because of the greater diversity of environmental factors from one location to another of this group. However, two hybrids, 1689 and 1665, were consistently high producers at all three locations. The hybrids 1696, 1540, and 1591 were consistently high producers at both Morgantown and Point Pleasant, but for some reason did not perform up to expectation at Wardensville. Other hybrids showing merit were N.J. 10, A.E.S. 805, 1585, and 1688, although the latter two tended to exhibit poorer standability.

Since only one county trial was maintained for the three-year period in Section 4, no summary could be made. The average of the performance trials conducted in Wayne County is given in Table 23. The fertility of the soil on which these trials were conducted tended to be low and thus yields were not optimum.

The average production for State experimental farm trials at Point Pleasant is for two years only (1958 and 1960) because a drought in 1959 caused a crop failure. In trial I (Table 21) the hybrids W.Va. 7802 and experimental 1697 were top performers. Several other hybrids which performed well were 1573, 1681, Ky 105, N.J. 9, and a white line, Ky 5712W. Of these the line Ky 105 is quite late and thus might not always mature properly for storage unless dried. In trial II (Table 22) the experimentals 1696, 1689, and 1540 performed well. Other promising lines were N.J. 10, 1665, and 1591. The line A.E.S. 805, although yielding significantly less than the top three lines, performed well in other trials.

The over-all mean performance of certain hybrids tested in the Section 3 and Section 4 State experiment station trials is given in Table 30. Of the medium-late to late season lines only those which outyielded U.S. 13 and of the medium-season lines only those outyielding Ia 4376 or W.Va. B-25 are given. Of the medium-maturity lines, the hybrids 1662 and 1695 appear to be somewhat superior to the standard. The line 1680, although yielding less than the top two medium-season

lines for all locations, has performed very well in climatic Sections 2 and 3a. Among the later-season lines, 1689 and W.Va. 7802 continue to hold the edge in production. However, as can be seen in the table, several other hybrids have good performance records.